

REMARKS

In the Office Action the Examiner noted that claims 6-18 are pending in the application and the Examiner rejected all claims. By this amendment, claims 6, 15, 17 and 18 have been amended. Thus, claims 6-18 are pending in the application. It is further noted that claims 1-5 have been previously withdrawn from consideration. The Examiner's rejections are traversed below.

Rejection under 35 U. S. C. § 103

In item 2 on pages 2-7 of the Office Action the Examiner rejected claims 6, 8, 12-15, 17 and 18 under 35 U.S.C. 103 as unpatentable over U.S. Patent 6,519,507 to Noguchi et al. in view of international application WO90/06836 to Karakama et al.

Claims 6 as amended is directed to a teaching position correction apparatus for correcting a teaching point position of a robot operation program. The apparatus includes work tool moving/stopping means allowing a work tool mounted on an arm tip end of the robot to move toward a teaching point of the robot operation program on a path which intersects the teaching point. The work tool moving/stopping mean automatically stops the work tool prior to reaching the teaching point. A jog feed means moves the robot by jog feeding from a position where the work tool is stopped by the work tool moving/stopping means. A positional relation presenting means presents, to an operator, a positional relation between the work tool and the operation target. A teaching position correction instructing means commands to correct the teaching position. Thus, the apparatus of claim 6 accommodates errors which are caused when a robot is relocated to another factory or another place in the same factory, or when the off-line prepared operation program is applied to an actual robot. In particular, errors caused by such relocation make it necessary to correct a teaching position of the program after the relocation or when the operation program prepared offline, so as to avoid collisions between the robot and an operation target.

Noguchi et al. states that when the button 9a is pressed after selecting the button 8d, the robot 2 travels on the travelling track 1 until the distance between the coordinate origin 3 and the movement target point is minimized **and the robot 2 travels until the robot 2 directly faces** the movement target point 7. See col. 4, lines 1-6. It is respectfully submitted that the Examiner is interpreting the target point 7 as the "teaching point" of claim 6. Even though the distance between the coordinate origin 3 and the movement target point is minimized, the robot 2 does not stop prior to reaching the target point and does not travel on a path which intersects

the teaching point. To the contrary, the robot 2 travels until it **directly faces** the target point.

Furthermore, Noguchi relates to a robot **off-line teaching system**, determining automatically the position on a traveling track 1 at which a robot 2 (traveling on the traveling track) stays. This robot 2 has three degrees of robot positions and one degree of traveling track. In order to teach the positions of the robot, it is first necessary to determine the position on a traveling track 1 at which the robot 2 stays. However, the position on the traveling track 1 at which the robot 2 stays can be selected to any position as far as a target point falls within the robot arm operation range. Noguchi discloses automatically determining the position on the traveling track 1 to which the robot 2, having degrees of freedom, is caused to travel. Noguchi only discloses **how to determine the position on a traveling track on which the robot stays**.

Noguchi et al. fails to teach or suggest “A **teaching position correcting apparatus** for correcting a teaching point position of a robot operation program, comprising a work tool moving/stopping means allowing a work tool ... to move toward a teaching point of said robot operation program on a path which intersects the teaching point, and to **automatically stop** said work tool **prior to reaching the teaching point**” (emphasis added).

Karakama et al. relates to a robot operation method which enables the teach point taught in advance to the robot to be manually corrected during the automatic operation of the robot without using a visual sensor. Karakama et al. fails to teach or suggest a “work tool moving/stopping means for allowing a work tool ... to move toward a teaching point of said robot operation program on a path which intersects the teaching point, and to **automatically stop** said work tool **prior to reaching the teaching point**” (emphasis added).

Accordingly, claim 6 patentably distinguishes over the cited art.

Claims 8 and 12-14 depend from claim 6 and include all of the features of that claim, plus additional features that are not taught or suggested by the cited art and therefore patentably distinguish over the cited art.

Claim 15 is directed to a teaching position correcting apparatus which includes:

work tool moving/stopping means allowing a work tool mounted on an arm tip end of said robot to move toward a teaching point of said robot operation program on a path which intersects the teaching point, and to automatically stop said work tool prior to reaching the teaching point;

Therefore, it is submitted that claim 15 patentably distinguishes over the prior art.

Claim 16 depends from claim 15 and includes all of the features of that claim, plus

additional features that are not taught or suggested by the cited art and therefore patentably distinguishes over the cited art.

Claim 17 recites:

work tool moving/stopping means allowing a work tool mounted on an arm tip end of said robot to move toward a teaching point of said robot operation program on a path which intersects the teaching point and to automatically stop said work tool when the distance between said work tool and said teaching point becomes shorter than a predetermined distance;

Accordingly, claim 17 patentably distinguishes over the cited art.

Claim 18 recites:

moving a work tool mounted on an arm tip end of a robot toward a teaching point of a robot operation program on a path which intersects the teaching point and automatically stopping the work tool prior to reaching the teaching point;

moving the robot by jog feeding from a position where the work tool is stopped;

Therefore, it is submitted the claim 18 patentably distinguishes over the prior art.

Rejection of Claim 7

In item 3 on pages 7 and 8 of the Office Action the Examiner has rejected claim 7 under 35 USC 103(a) as being unpatentable over Noguchi et al and Karakama et al. and further in view of Watanabe et al (6,763,384). Claim 7 depends from claim 6 and includes all of the features of that claim, plus additional features that are not taught or suggested by the cited art and therefore patentably distinguishes over the cited art. Furthermore, nothing has been cited or found in Watanabe et al. that cures the deficiencies of Noguchi et al. and Karakama et al.

Rejection of Claim 9 and 11

In item 4 on pages 8-10 of the Office Action the Examiner has rejected claims 9 and 11 under 35 USC 103(a) as being unpatentable over Nogouchi et al. and Karakama et al. and further in view of Barrows (4,626,013). Claims 9 and 11 depend from claim 6 and include all of the features of that claim, plus additional features that are not taught or suggested by the cited art and therefore patentably distinguish over the cited art. Furthermore, nothing has been cited or found in Barrows that cures the deficiencies of Noguchi et al. and Karakama et al.

Rejection of Claim 10

In item 5 on page 10 of the Office Action the Examiner rejected claim 10 under 35 USC 103(a) as being unpatentable over Noguchi et al. and Karakama et al and further in view of Flora (6,014,909). Claim 10 depends from claim 6 and includes all of the features of that claim, plus additional features that are not taught or suggested by the cited art and therefore patentably distinguishes over the cited art. Furthermore, nothing has been cited or found in Flora that cures the deficiencies of Noguchi et al. and Karakama et al.

Rejection of Claim 16

In item 6 on pages 10 and 11 the Examiner has rejected claim 16 under 35 USC 103(a) as being unpatentable over Noguchi et al. and Karakama et al. and further in view of Watanabe et al. Claim 16 depends from claim 15 and includes all of the features of that claim, plus additional features that are not taught or suggested by the cited art and therefore patentably distinguishes over the cited art. Furthermore, nothing has been cited or found in Watanabe that cures the deficiencies of Noguchi et al. and Karakama et al.

Summary

It is submitted that none of the references, either taken alone or in combination, teach the present claimed invention. Thus, claims 6-18 are deemed to be in a condition suitable for allowance. Reconsideration of the claims and an early notice of allowance are earnestly solicited.

Finally, if there are any formal matters remaining after this response, the Examiner is requested to telephone the undersigned to attend to these matters.

If there are any additional fees associated with filing of this Amendment, please charge the same to our Deposit Account No. 19-3935.

Respectfully submitted,

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